0014

State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Kathleen Clarke
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

March 29, 1999

TO: Pamela Grubaugh-Littig, Permit Coordinator

THRU: Daron Haddock, Permit Supervisor

FROM: Sharon Falvey, Senior Reclamation Specialist SKF

RE: Request for Bond Release, Nevada Electric Investment Company, Wellington Preparation Plant, ACT/007/012-BR97, File #2, Carbon County, Utah

SYNOPSIS:

The Permittee proposes to change the topsoil borrow area, hydrologic boundary and post-mining land use for a portion of the site in order to obtain a partial bond release. This amendment includes data analyses and a summary of hydrologic conclusions for the bond release area in Appendix 880.330. There have been no agency or public issues raised concerning water quality and quantity at this site, during the public notification period.

ANALYSIS:

This site was in operation prior to the enactment of the 1987 mining law, therefore baseline information is absent. However, the Division reviewed the data collected for the Wellington Preparation Plant and reviewed data summarized by the applicant in Appendix 880.330 to conclude the following:

- The permanent diversion UD-1 will not have a significant effect on Price River Flows or water rights in the diverted section.
- Acid forming material was not found in analyses of coal mine waste within the bond release area.
- Boron exists in the coal waste at levels greater than the surrounding soils as presented in the mine plan soil pit analyses for areas surrounding the site. Although the increased boron levels at the site could increase boron concentration in the groundwater levels, the upgradient area has greater or similar concentrations as the groundwater wells near the coal waste. The increased boron is not expected to adversely affect the groundwater and

surface water in the area. There are no state groundwater standards for boron.

- Surface water has not been recorded to discharge from the site and therefore, meets state surface water UPDES criteria associated with the disturbed area.

- No water is being discharged from a mine. Regulatory requirements of 40 CFR 434.50 for alkaline underground mine drainage does not apply.

Post Mining Land Use Change

The proposed industrial land use is expected to be a coal loading operation. Since no coal processing will occur, potential for impacts to water quality may be reduced when compared to historical site operations in the area. This activity should not present a threat to water diminution or pollution (R645-301-413.320). The potential for impacting ground and surface water associated with loadout operations are not expected to vary from those activities conducted at the site prior to bond release and are expected to be less than is associated with some other industrial uses. However, the coal waste remaining on site does contain boron levels that are greater than the background levels shown for soils in the surrounding area and exceed the divisions criteria as it relates to vegetative growth media standards. A further problem is added due to the coal waste location which is in the area proposed as a sedimentation pond area. This could promote increased water table elevation changes, evaporative concentration and boron dissolution into the groundwater. Existing data suggests the natural background levels can be high. Further discussions are provided in this document under "Hydrologic Balance".

The sedimentation ponds presently existing at the site are described as having utility as interim sediment control measures. The UPDES permit associated with the site and included within the bond release area should be transferred prior to bond release.

Information was submitted in this amendment for the additional runoff that will drain to the dryer sediment pond. The pond has existing capacity to treat runoff from this area. However, information used to show increased capacity is not per the current configuration as provided in Appendix L in the MRP. The existing capacity and design of the sedimentation pond is adequate for the postmining land use intent which is for interim sediment control measures. The submitted information regarding the dryer pond is not pertinent to the permitted area that would remain following bond release. The information submitted regarding Watershed 4 should be withdrawn from the permit amendment.

Water rights to be used in the bond release area are being transferred. This transfer must occur prior to bond release. The track hopper used to access groundwater was tested and results are included in Appendix 880.330. Although this water is high in Chloride, Sulfate, Sodium and Total Dissolved Solids. It is acceptable for the proposed use, for dust suppression on coal and meets state ground water standards for the parameters analyzed.

Hydrologic Balance

Surface Water

The postmining land use includes a permanent diversion in Ditch UD-1 relocating it approximately 5,000 ft south from it's previous discharge point. The average diverted flow was estimated by the applicant to be 19 acre-feet per year, assuming the runoff yields one inch per acre per year. The following water right diversions are situated between the previous drainage location and the permanent diversion discharge point; 215, 216, 254, 255, 371, 402, 405, 3882, and 13809. Surface and Groundwater rights 215,216, 371 are granted to Genwal Coal Co Inc with IPA and NEICO. Groundwater rights 254 and 255 are granted to the Kaiser Coal Corp. Surface water rights 3882, 371 are granted to Genwal Coal Co. Inc; while, rights 402 is granted to Arnel Milener and 405 belongs to the KFJ Ranch Partnership. No information could be found related to 13809 displayed on map G9-3507. A summary of surface water rights information can be found in table 7.24-3 and 7.24-4 in the MRP. Water diverted by ditch UD-1, is present during precipitation or snowmelt periods when water contributions have also increased in adjacent areas; therefore, diverting this water is not expected to have a significant effect on Price River flows or associated water rights.

Ground Water

Some water diverted from ditch UD-1 could have potentially reached and recharged the farming lands adjacent to the Ridge Road and northeast of the preparation plant railroad. Again the decreased recharge is expected to be inconsequential because ephemeral water is diverted during precipitation or snowmelt periods. Additionally recharge to the site is believed to be influenced from the Price River, north of the site.

The Cumulative Hydrologic Impact Assessment, August 22, 1984 indicates the water table is generally within 15 feet of the surface in the preparation plant area. Elevations recorded for the preparation plant are summarized in Table 1. The well locations are shown on map 2, Appendix A, copied from the plan.

Figures 1 and 2, Appendix A, graphically present information relative to water elevations through time for the groundwater wells. Alluvium is present in a configuration similar to an abandoned river channel, Map 2 Appendix A (Figure 612 a from the permit). On Map 2, historically used farm lands lie in and adjacent to the Ridge Road and north east of the preparation plant railroad surrounding GW-14. A source of water for the alluvial groundwater system is from the Price River north of the permit area.

In Figures 1 and 2 it can be observed that the wells in the preparation plant change with seasonal and climatic variation. Higher water levels were observed in March and June for most years except doughty periods. High flows are generally observed in March through June for the Price River below Miller Creek as seen in the MRP, 1972-1986 record, Table 7.28-3C: the

elevated well water levels suggest the river water may influence ground water elevations. Based on the information presented GW-14 is the upgradient ground water level much of the time except for occasional elevated levels at GW-9 and GW-9B. It should also be noted that there have been discrepancies in the data collected for GW-9 and GW-8 which may have resulted from incorrectly identifying the reference elevation (e.g. the ground v.s. collar elevations).

Table 1.

Preparation Plant Alluvial Ground Water Well Data

Well	Average elevation(ft)	Maximum depth (ft. from surface)	Minimum depth (ft. from surface)	Standard Deviation	Comments
GW-7	5325.8	12.2	1.20	2.96	
GW-8	5325.7	28.1	12.1	4.97	
GW-9	5327.9 (5335.2)	18.5	-3.0 (3.0)	4.93 (3.88)	A couple of data values exceed the elevation of the well. Potentially these errors may come from inaccurately identifying the reference point (collar or ground elevation). The value in () represents corrections for collar elevations where water levels were elevated above the collar.
GW-9B	5328.6	18.0	6.0	3.91	
GW-10	5327.8	10.7	4.3	2.54	
GW-11	5325.6	35.1	7.1	4.93	This well, located at the north end of the dryer pond, was reported as dry in 1994. It is believed the construction conducted immediately adjacent to the well at that time disrupted the well function. This well needs to be abandoned.
GW-12	5327.6	10.2	0.63	2.16	
GW-13	5331.2	26.2	13.5	2.21	Dry in periods when water table elevation is lowered below the well depth.
GW-14	5330.0	14.6	2.77	2.70	

Well GW-11, located at the north end of the dryer pond, was reported as dry in 1994. It is believed the construction conducted immediately adjacent to the well at that time disrupted the well function. This well needs to be appropriately sealed and abandoned.

Surface Water Quality

Water quality standards applicable for the Price River are obtained from "Standards of Quality for Waters of the State" Utah Administrative Code R317-2, Utah Department of Environmental Quality. The Price River from the Green River confluence to Castle Gate are protected for uses 2B (secondary contact recreation such as boating, wading, or similar uses), 3C (nongame fish and other aquatic life), and 4 (agricultural uses including irrigation of crops and stock watering). These requirements apply to the surface water contributed from the Wellington Preparation Plant runoff.

Surface water sampling stations associated with the proposed bond release area include: SW8, UPDES 004, UPDES 006, and UPDES 007. These sites have been included in the regular monitoring program. Since slurry operation cessation in 1988, no discharge has been recorded; therefore, surface water discharged from the site has met state surface water UPDES criteria associated with the disturbed area and no other comparisons to state standards at the Price River are necessary.

Ground Water Quality

Ground water at the site has increased in concentration for TDS, pH, Boron, and Sodium. See Appendix 880.330 from the mine plan. Total dissolved solids have increased since 1986. Slurry operations ceased in 1984 and it is suspected that the slurry operations, using Price River water at the site, reduced the groundwater TDS and flushed salts from the shallow waters. Additional influences may have included the wet climatic period experienced in 1983 and 1984 (monthly flows greatly exceeded the average for all but one month in 1984 in the Price River below Miller Creek, 1972-1986 record. Table 7.28-3C, ACT/007/012, incorporated 1/2/98).

Acid and Toxic Forming Materials.

Five composite samples analyzed from coal waste material within the bond release area were analyzed for acid and toxic forming properties. Values obtained from pH analyses are basic between 7.44 and 7.66. In addition, the acid base potential remained positive between 17.46 and 77.5 for the composite samples. No acid forming material is present at the site based on these analyses.

Selenium was analyzed by AB-DTPA extraction and was determined to be present ranging from 0.05 mg/kg to 0.07 mg/kg. This concentration is lower than is present in some adjacent natural soils and is not considered to be a concern to surface or ground water quality.

Boron was found to be in concentrations ranging from 5.08 to 6.53 ppm in the coal waste material. This concentration level is considered toxic for some plants. It appears the current elevated boron concentrations in the ground water result from the water table interacting with areas where boron has accumulated through evaporative processes. Boron is not identified as a regulated parameter for groundwater quality; however, the surface water standard not to exceed

0.75 mg/l applies to Class 4 water in the Price River. The ground water has exceeded the surface water standard but, surface water data at SW-2, down stream, has not exceeded 0.47 mg/l.

Boron data are summarized for wells in the Preparation Plant area in Table 2. Presently, GW-14 is the upgradient well. Average boron concentrations were highest at this well. Even when the one extreme high value (5170 ug/l) is removed from total boron the average is 952 ug/l. In general, concentrations have increased at each of the sites in the 1996 through 1997 period, and water table elevations have also increased (Figures 1, 2, 3 and 4, Appendix A). It appears the increased concentrations in Boron are related to changes in water table elevations and climatic influences. Although the boron concentrations in well GW-9 is greater than GW-14 in 1997, the concentration has generally been lower than concentrations recorded at GW-14. Concentrations through time are shown for Wells GW-14, GW-13 GW-12 and GW-9 for dissolved boron in Figure 3. This graph illustrates the general pattern for total and dissolved boron between GW-14 and wells surrounding the preparation plant. Even though elevated boron levels remain in the coal waste in the proposed bond release area may increase the boron concentration in the groundwater. The data does not indicate this level will be greater than well GW-14 which is often upgradient. Furthermore, the surface water sites have not exceed standards for boron in irrigation water, Figure 4.

Table 2.

Boron Concentrations in Ground Water

Well		Average ug/l	Maximum ug/l	Minimum ug/l	Standard Deviation
GW-7	Total-B	588.65	930.0	180.0	172.6
	Dissolved-B	650.83	1000.0	400.0	144.5
GW-8	Total-B	692.0	1560.0	270.0	345.5
	Dissolved-B	742.5	1200.0	300.0	249.5
GW-9	Total-B	620.7	1500.0	50.0	311.8
	Dissolved-B	728.3	1760.0	50.0	495.3
GW-9B	Total-B	793.0	1600.0	500.0	313.0
	Dissolved-B	845.0	1300.0	500.0	270.0
GW-10	Total-B	653.9	1400.0	200.0	231.8
	Dissolved-B	773.3	1300.0	400.0	224.0
GW-11	Total-B	622.4	1210.0	220.0	237.7
	Dissolved-B	485.0	570.0	400.0	85.0
GW-12	Total-B	570.0	1500.0	200.0	353.0
	Dissolved-B	686.7	1300.0	100.0	339.8
GW-13	Total-B	788.5	1700.0	481.0	357.9
	Dissolved-B	890.0	1600.0	500.0	379.1
GW-14	Total-B	1135.4	5170.0	400.0	927.9
	Dissolved-B	1158.3	1800.0	400.0	377.0
SW-1	Total-B	312.3	729.0	50.0	140.0
	Dissolved-B	299.0	500.0	120.0	126.5
SW-2	Total-B	299.8	609.0	45.0	140.0
	Dissolved-B	305.6	500.0	120.0	131.7

*note 4th and 2nd quarter of 1998 not available for SW-2 and SW-1.

Ground Water Quality Protection

"Administrative Rules for Ground Water Quality Protection" (R317-6, Utah Administrative Code, Utah Department of Environmental Quality") provides a standard for assessment of ground water quality impacts.

The proposed bond release area is associated with ground water monitoring wells: GW - 9, GW - 9B, GW - 10, GW - 11, GW - 12, GW - 13, and GW - 14 (see Map 2). Well GW - 14 is considered mostly out of the range of influence of site operations and is used as a "baseline" well. The operator presented Ground water quality data collected since 1988 in Tables 880.330 - 1 and 880.330 - 2 in Appendix 880.330. The operator has not requested removing these sites from the water monitoring plan, and therefore, proper abandonment will be required and monitoring will be conducted until such time where the applicant applies to remove the wells from the monitoring regimen.

Total dissolved solids (TDS) in GW-14 have at times exceeded 10,000 mg/l. Average TDS @ GW-14 has been about 9,000 mg/l (Appendix 880.330). At times the ground water quality of GW-14 is classifiable as Class III - Limited Use Ground Water, and at times TDS exceeds 10,000 mg/l and the ground water quality is classifiable as Class IV - Saline Ground Water. The Utah State Administrative rule **R317-6. Ground Water Quality Protection** provides for classification and protection levels for ground water with TDS between 3,000 and 10,000 mg/l and greater than 10,000 mg/l as follows:

TDS 3,000 to 10,000 mg/l

"3.6 CLASS III - LIMITED USE GROUND WATER
Class III ground water has one or both of the following characteristics:
A. Total dissolved solids greater than 3000 mg/l and less than 10,000 mg/l, or;
B. One or more contaminants that exceed the ground water quality standards listed in Table 1." See: Table 3.

(Table 1 referenced is not included in this document but, can be found in R317-6, Utah Administrative Code. Many constituents in this table such as Volatile and Organic Chemicals have not been tested at this site and have not been the policy of the Division to be tested in past years. Those parameters that have been analyzed within the last 10 years are included in Table 3).

"4.6 CLASS III PROTECTION LEVELS
A. Class III ground water will be protected as a potential source of drinking water, after substantial treatment, and as a source of water for industry and agriculture.
B. The following protection levels will apply:

1. Total dissolved solids may not exceed 1.25 times the background concentration level.
2. When a contaminant is not present in a detectable amount as a background concentration, the concentration of the pollutant may not exceed the greater of 0.5 times the ground water quality standard, or the limit of detection.
3. When a contaminant is present in a detectable amount as a background concentration, the concentration of the pollutant may not exceed the greater of 1.5 times the background concentration or 0.5 times the ground water quality standard; however, in no case will the

oncentration of a pollutant be allowed to exceed the ground water quality standard. If the background concentration exceeds the ground water quality standard no increase will be allowed."

TDS Greater Than 10,000 mg/l

"3.7 CLASS IV - SALINE GROUND WATER
Class IV ground water has total dissolved solids greater than 10,000 mg/l."

"4.7 CLASS IV PROTECTION LEVELS
Protection levels for Class IV ground water will be established to protect human health and the environment."

The information presented in table 3 indicates field parameters for pH were exceeded at both the high and low pH range. pH was exceeded at the low end 4 times and the high end twice at GW-7; however, the lab shows a pH ranges between 7.1 and 8.2. Similarly, all other sites have ranges where the lab data shows pH within the standard limits. The lowest value being 6.8 and the highest being 8.3 at GW-9B. It is believed the variation between lab and field data are due to calibration, user, or mechanical errors.

Lead standards are shown to be exceeded according to available data. These detected values were all reported in 1986. It is believed the values reported in 1986 were actually detection limits. Current data show all values are less than the detection limit; although the detection limit exceeds the standard for the most recent samples, previous data were within the state standards with appropriate detection limits.

Data show values were exceeded for Nitrate in GW-13. GW-13 is completed upgradient of most activity within the preparation plant area. Nitrate was elevated between 1985 and 1986 and decreased in 1988 and 1989. It is not known what caused the elevated levels in nitrate. Other wells did not show nitrate concentrations exceeding the standards during this period; therefore no groundwater impact is believed to occur related to mining operations. Total Nitrogen concentrations were never elevated above the standard for ground water. However, Nitrite exceeded the standard twice at GW-13. Once in 1984 and once in 1988. Nitrite exceeded the standard once at GW-8 in 1988.

Because background levels do not exist prior to mining it is difficult to establish changes in background levels. However, no impact can be shown to have occurred at the site resulting from mining operations and current data do not exceed ground water standards for the constituents monitored. Requirements for the state monitoring program removed Barium and Floride from

the current monitoring requirements. Groundwater data indicate groundwater quality has not been impacted from mining operations and currently does not exceed groundwater standards of the state, except for GW-13 which presently exceeds nitrate at 85 mg/l. This well, completed in the Mancos shale, has had no apparent affect on other wells in the area and is upgradient from most activities at the preparation plant.

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.

Parameter	Site	Mean	Standard Deviation	Minimum	Maximum
(field) pH units'	GW-7	7.52	0.59	4.34	9.06
	GW-8	7.33	0.54	6.26	8.81
	GW-9	7.32	0.59	6.26	8.53
	GW-9B	7.34	0.64	6.20	9.13
	GW-10	7.42	0.69	5.09	9.36
	GW-11	7.01	0.67	4.94	8.25
	GW-12	7.6	0.50	6.82	8.86
	GW-13	7.26	0.48	6.54	8.12
	GW-14	7.38	0.73	4.85	9.14
Standard	6.5 - 8.5				

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.

Parameter	Site	Max	Number Samples	Detection limit(ug/l) min/max	#Non Detect (ug/l)
Floride (mg/l)	GW-7	1.36	16	NA	0
	GW-8	2.72	16	NA	0
	GW-9	2.86	16	NA	0
	GW-9B	0.42	1	NA	0
	GW-10	1.6	16	NA	0
	GW-11	2.89	16	NA	0
	GW-12	1.17	16	NA	0
	GW-13	2.93	15	NA	0
	GW-14	2.29	16	NA	0
Standard	4.0 mg/l				
Arsenic Dissolved (ug/l)	GW-7	2	3	<100	2
	GW-8	ND*	3	<100	3
	GW-9	ND*	3	<100	3
	GW-9B	ND*	1	<100	1
	GW-10	ND*	3	<100	3
	GW-11	ND*	2	<1	2

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.

Parameter	Site	Max	Number Samples	Detection limit(ug/l) min/max	#Non Detect (ug/l)
Arsenic Dissolved (ug/l)	GW-12	ND*	3	<100	3
	GW-13	ND*	3	<100	3
	GW-14	ND*	3	<100	3
Standard	0.05 mg/l or 50 ug/l				
Barium Dissolved (ug/l)	GW-7	20	3	<10	1
	GW-8	40	2	NA	0
	GW-9	30	2	NA	0
	GW-9B	NA			
	GW-10	35	2	NA	0
	GW-11	20	2	<10	1
	GW-12	20	2	<10	1
	GW-13	20	2	NA	0
	GW-14	50	2	NA	0
Standard	2.0 mg/l or 2000 ug/l				
Cadmium Dissolved (ug/l)	GW-7	ND	3	<5	3
	GW-8	ND	3	<5	3
	GW-9	ND	3	<5	3
	GW-9B	ND	1	<5	1
	GW-10	ND	3	<1/<5	3
	GW-11	ND	2	<5	2
	GW-12	ND	3	<5	3
	GW-13	ND	3	<5	3
	GW-14	ND	3	<5	3
Standard	0.005 mg/l or 5 ug/l				
Copper Dissolved (ug/l)	GW-7	ND*	4	<5/<10	4
	GW-8	10	3	<10	2
	GW-9	10	3	<10	2
	GW-9B	ND	1	<10	1
	GW-10	20	3	<10	2

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.

Parameter	Site	Max	Number Samples	Detection limit(ug/l) min/max	#Non Detect (ug/l)
Copper Dissolved (ug/l)	GW-11	ND	2	<10	2
	GW-12	10	3	<10	3
	GW-13	ND	3	<10	3
	GW-14	ND	3	<10	3
Standard	1.3 mg/l or 1300 ug/l				
Lead Dissolved (ug/l)	GW-7	20	18	<5/<100	15
	GW-8	30	17	<5/<100	16
	GW-9	30	17	<5/<100	16
	GW-9B	ND	15	<5/<100	15
	GW-10	20	17	<5/<100	16
	GW-11	20	2	<20	1
	GW-12	30	13	<5/<100	3
	GW-13	ND*	3	<5/<100	3
	GW-14	20	13	<5/<100	12
Standard	0.015 mg/l or 15 ug/l				
Selenium Dissolved (ug/l)	GW-7	ND	20	<1/<10	20
	GW-8	20	19	<1/<10	18
	GW-9	3	19	<1/<10	18
	GW-9B	10	12	<1/<10	11
	GW-10	2	19	<1/<10	17
	GW-11	4	15	<1/<5	14
	GW-12	42	16	<1/<10	14
	GW-13	598	6	1/<10	4
	GW-14	ND	14	<1/<10	14
Standard	0.05 mg/l or 50 ug/l				
Zink Dissolved (ug/l)	GW-7	30	4	NA	0
	GW-8	50	3	NA	0
	GW-9	30	4	NA	0
	GW-9B	10	1	NA	0

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.

Parameter	Site	Max	Number Samples	Detection limit(ug/l) min/max	#Non Detect (ug/l)
Zinc Dissolved (ug/l)	GW-10	210	3	NA	0
	GW-11	170	2	NA	0
	GW-12	30	3	<10	1
	GW-13	61	5	<10	1
	GW-14	50	3	NA	0
Standard	5.0 mg/l or 5000ug/l				
Nitrate as N (mg/l)	GW-7	2.49	18	<0.01/<0.1	3
	GW-8	1.85	17	<0.01/<0.1	4
	GW-9	1.10	15	<0.01	2
	GW-9B	ND	1	<0.1	1
	GW-10	0.75	18	<0.01	2
	GW-11	0.72	16	<0.01/<0.05	3
	GW-12	2.8	18	<0.01	1
	GW-13	148.0	17	NA	0
	GW-14	2.5	15	<0.01	2
Standard	10 mg/l				
Nitrite as N (mg/l)	GW-7	0.11	14	<0.005/<0.05	8
	GW-8	1.54	15	<0.005/<0.05	9
	GW-9	0.1	14	<0.005/<0.05	7
	GW-9B	ND	1	<0.005	1
	GW-10	0.04	14	<0.005/<0.05	10
	GW-11	0.597	15	<0.01/<0.05	7
	GW-12	0.34	16	<0.005/<0.05	7
	GW-13	1.53	14	<0.01	1
	GW-14	0.145	14	<0.005/<0.05	10
Standard	1.0 mg/l				
N Total (mg/l)	GW-7	2.54	16	<0.01	13
	GW-8	2.87	15	<0.01	11
	GW-9	1.32	16	<0.01/<0.1	5

Table 3. Standards for groundwater quality R317-6, Utah Administrative Code.					
Parameter	Site	Max	Number Samples	Detection limit(ug/l) min/max	#Non Detect (ug/l)
N Total (mg/l)	GW-9B	0.5	1	NA	0
	GW-10	1.26	16	<0.1/<0.2	5
	GW-11	0.65	15	<0.01	5
	GW-12	0.68	15	<0.01/<0.05	3
	GW-13	2.0	16	<0.1/<0.2	3
	GW-14	0.44	16	<0.01/<0.2	5
Standard	10.0 mg/l				

* ND = not detected at the detection limit.
# NA= no data available.
' Data included up to 4th quarter 1998 only.

Recommendation

The bond can be released as no pollution of surface and subsurface water has been determined to be occurring and, future occurrence of pollution from this site is expected to have a low probability as determined through the information and data analyzed. The following should be demonstrated to be completed prior to or, consecutively with bond release:

- UPDES permits associated with sedimentation ponds and ASCA's included within the bond release area should be transferred prior to bond release.

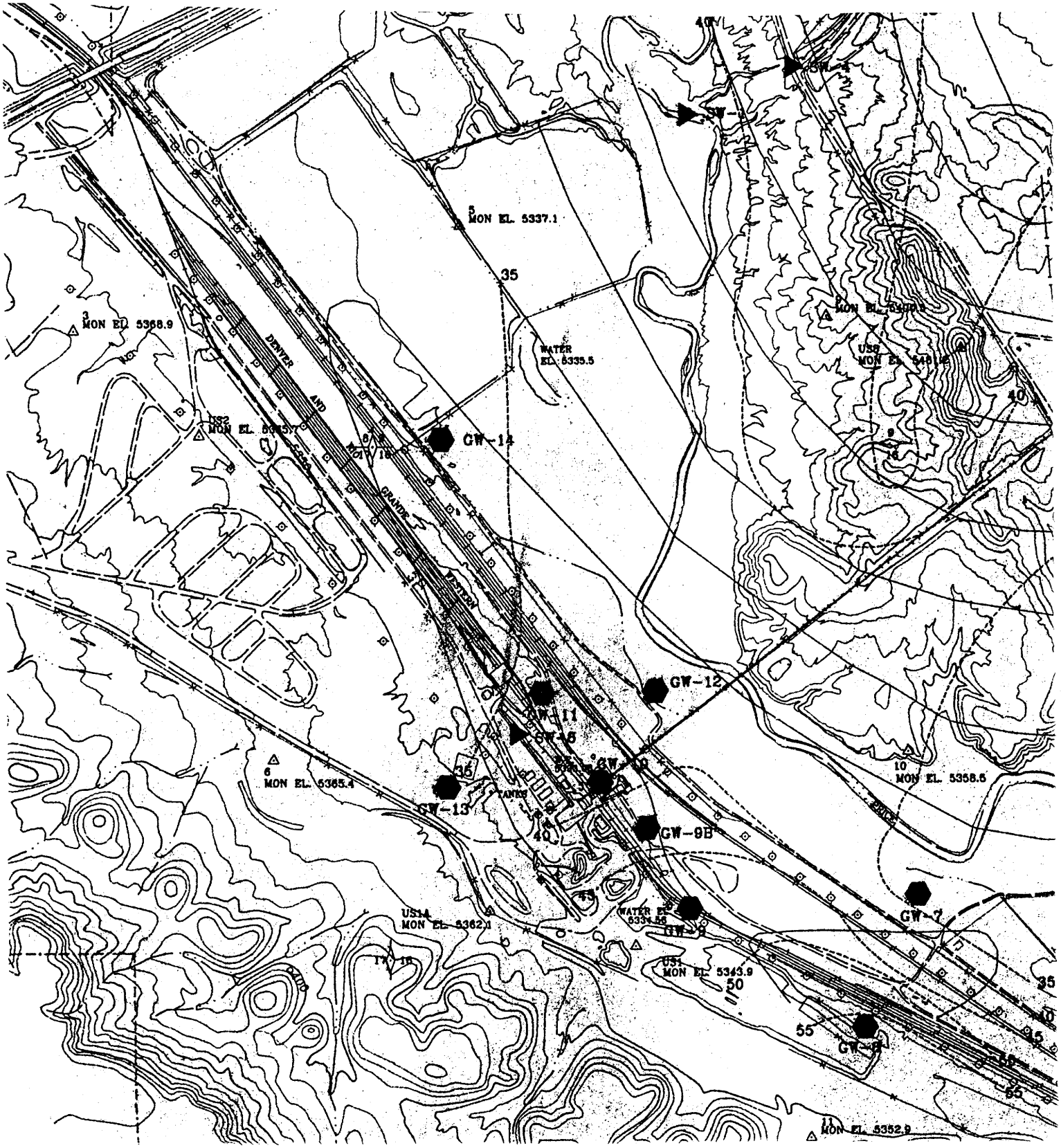
- Information submitted regarding Watershed 4 should be withdrawn from the permit amendment.

- Well GW-11, located at the north end of the dryer pond, was reported as dry in 1994. It is believed the construction conducted immediately adjacent to the well at that time disrupted the well function. This well needs to be appropriately sealed and abandoned prior to bond release.

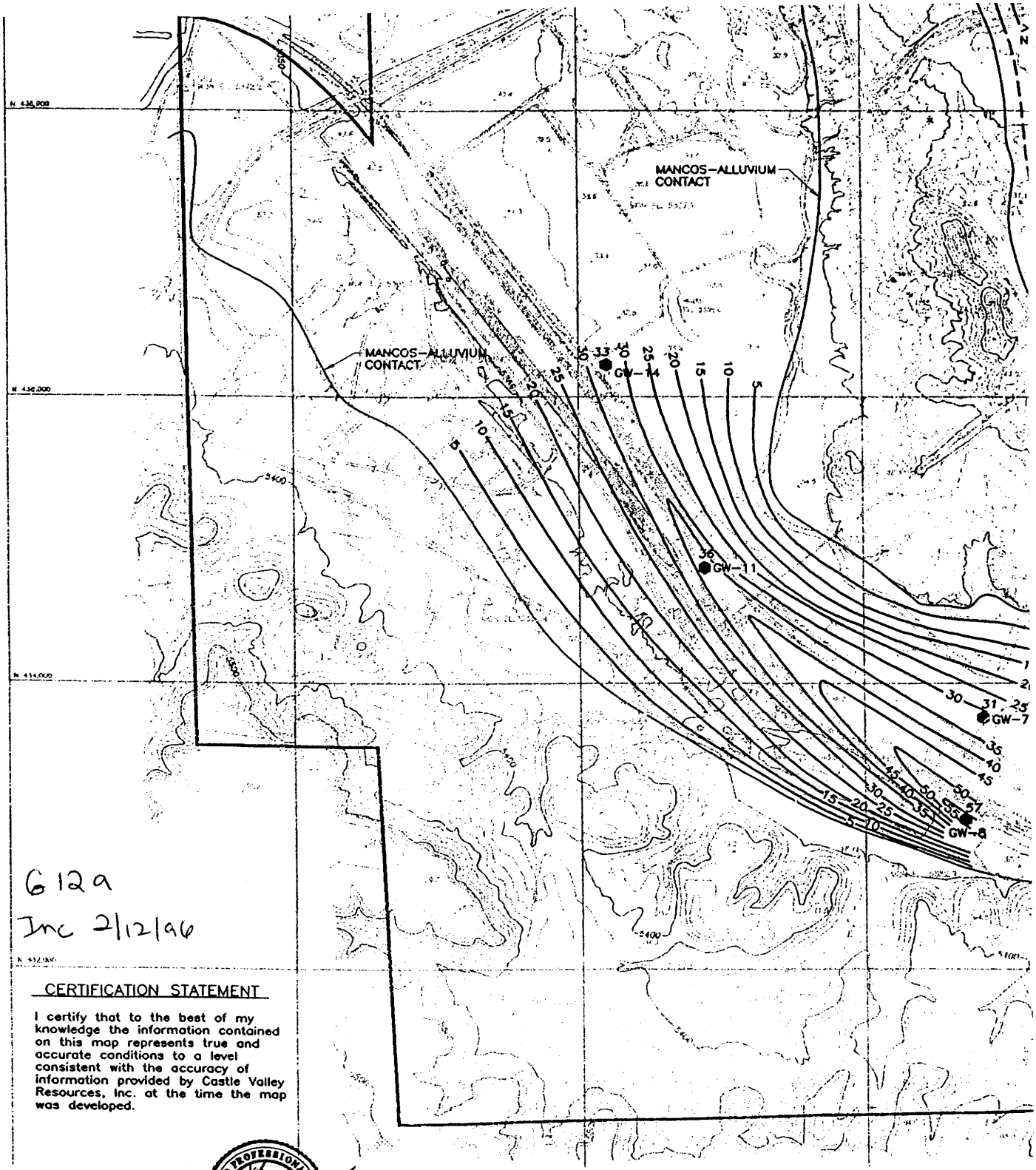
- Water rights to be used in the bond release area need to be transferred prior to bond release.

Appendix A

Map 1. Ground Water Monitoring Sites



Map 2. Alluvium Depth



6129
Inc 2/12/96

CERTIFICATION STATEMENT

I certify that to the best of my knowledge the information contained on this map represents true and accurate conditions to a level consistent with the accuracy of information provided by Castle Valley Resources, Inc. at the time the map was developed.

FILE NAME: Z:\CAD\093\612A-R3 FILE DATE: JUNE 05, 1995 PLOT OPTIONS PLOT IN = DWG UNITS: 1 = 500 PLOT AREA: 22.5,33 ORIGIN: DVIEW. XREF FILE NAME(S): Z:\CAD\093\DEPCONT.DWG

HANSEN ALLEN & LUCE Inc. CONSULTANTS ENGINEERS Salt Lake City Utah

REGISTERED PROFESSIONAL ENGINEER 7682 DAVID B. HANSEN PROFESSIONAL ENGINEER

DESIGNED BJB	3	6/95	ALLUVIUM ISOPACHS ADDED IN REFUSE PILE AREAS WHERE AVAILABLE	
DRAFTED JSJ	2	10/94	MODIFIED ISOPACH LINES	
CHECKED BJB	1	6/94	MODIFIED MANCOS–ALLUVIUM CONTACT LINE AND CONTOURS	
DATE NOVEMBER 1991	NO.	DATE	REVISIONS	

Figure 1

Wellington Preparation Plant

Alluvial Ground Water Elevation

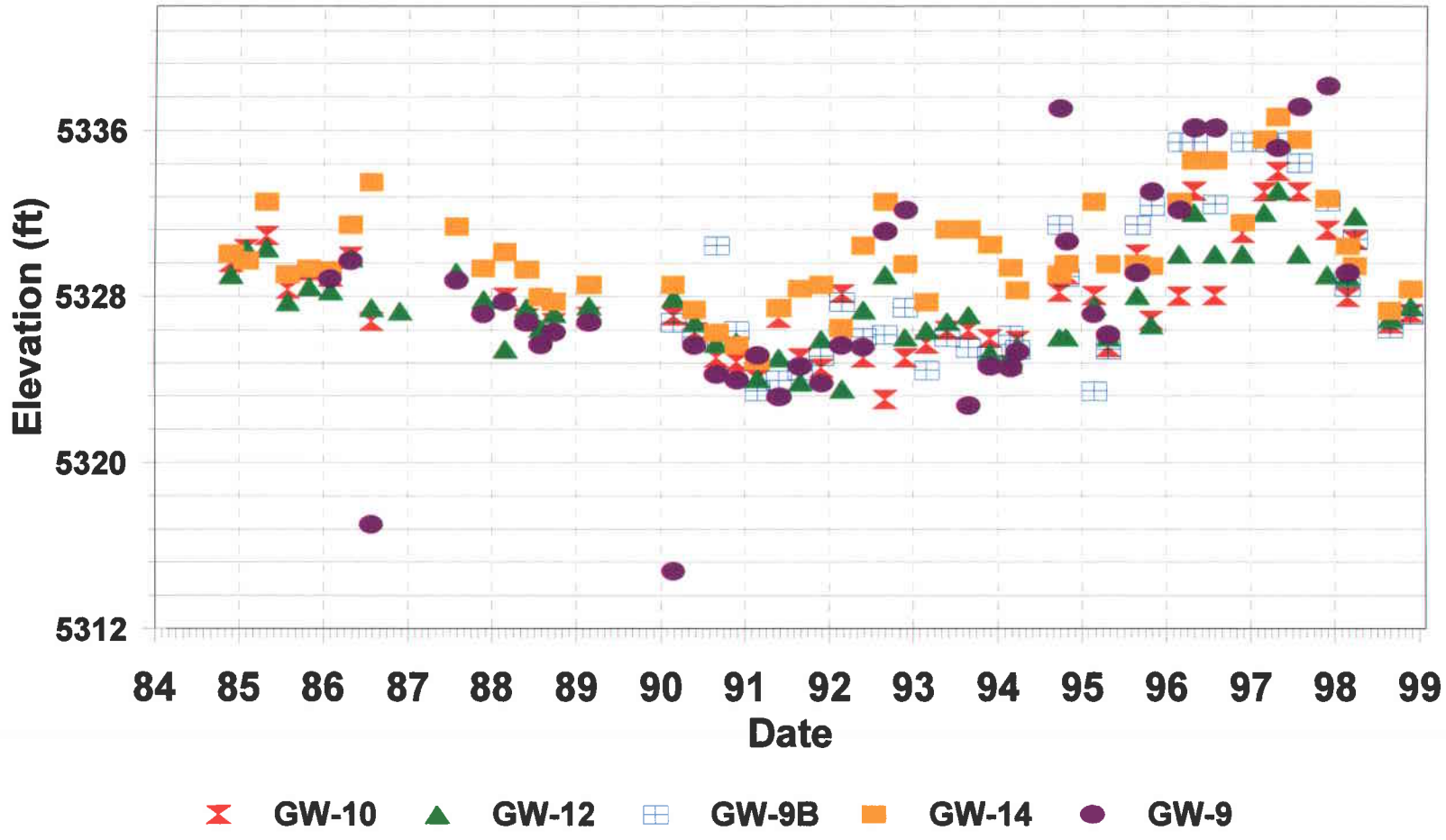


Figure 2

Wellington Preparation Plant

Alluvial Ground Water Elevation

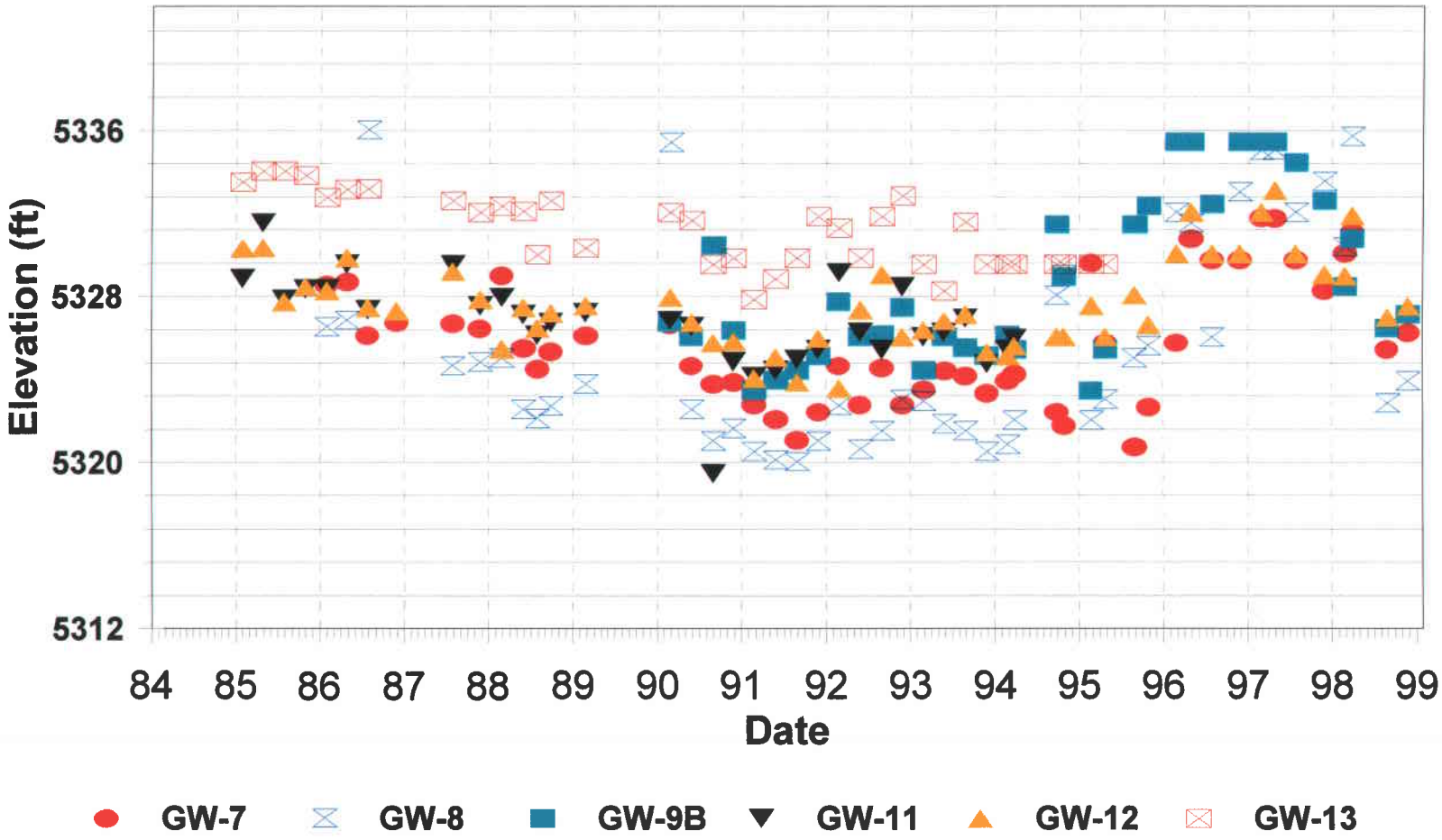
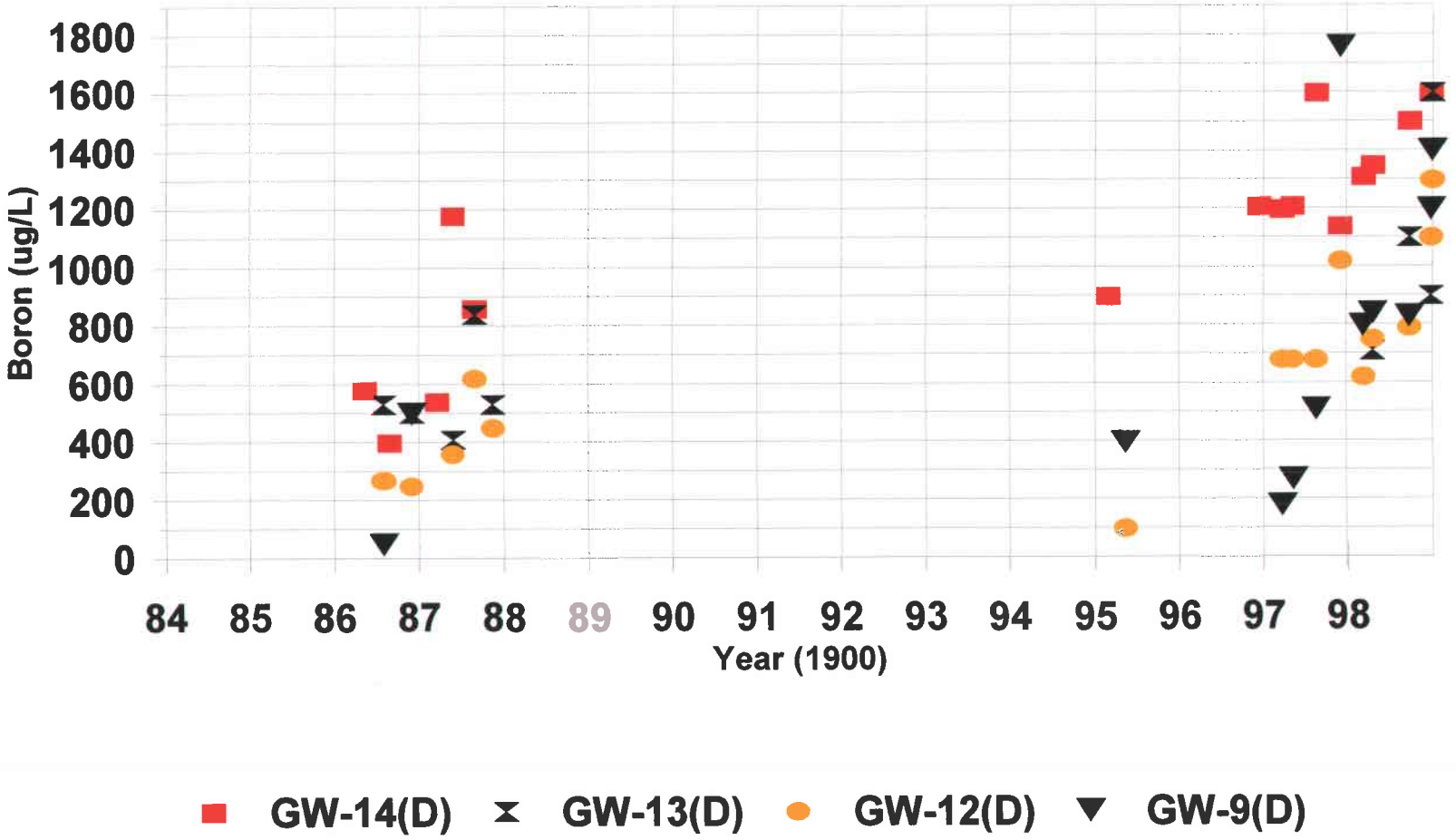


Figure 3

Wellington Preparation Plant

Ground Water - Boron

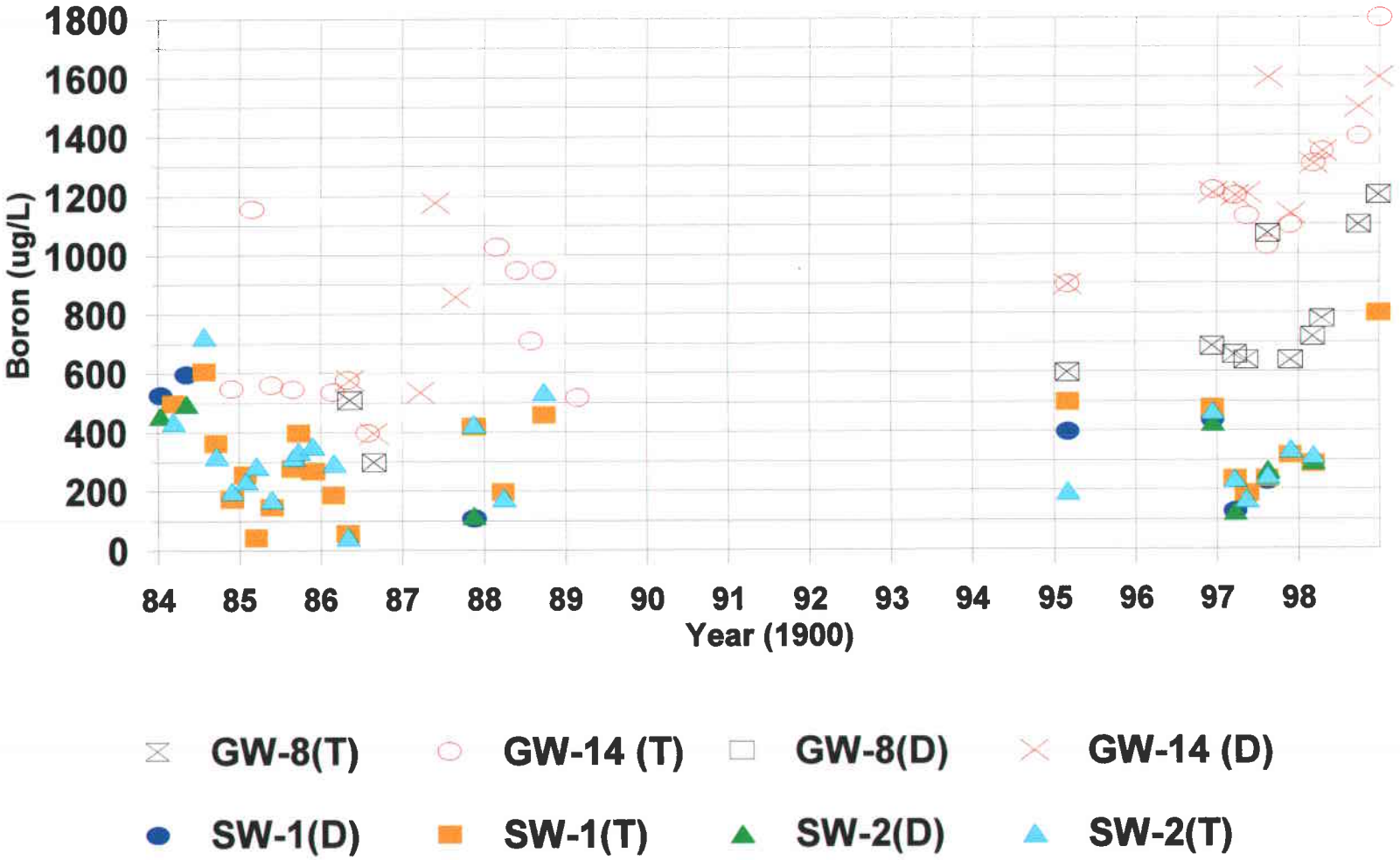


D= dissolved, outlier from GW-14 not shown

Figure 4

Wellington Preparation Plant

Surface and Ground Water - Boron



SW = surface water sites, D= dissolved, T= total; outlier from GW-14 not shown